

IN THE CLAIMS:

1-64. (Canceled)

65. (Currently amended) A method of transplanting human ES derived neural progenitor cells ~~in~~ into a host, said method comprising:

~~obtaining a source of neural progenitor cells prepared by obtaining~~ undifferentiated or pluripotent human embryonic stem cells;

culturing the cells by providing a differentiating signal under conditions which are non-permissive for stem cell renewal, which do not kill cells and/or or induce unidirectional differentiation toward extraembryonic lineages; ~~wherein said culturing the neural progenitor cells comprises culturing~~ in the presence of serum free medium supplemented with B27 and growth factors comprising EGF and bFGF; and

obtaining neural progenitor cells and injecting the neural progenitor cells into the central nervous system of the host.

66. (Currently amended) The method according to any one of claims 65 or 74-77, wherein the neural progenitor cells are injected into the lateral cerebral ventricle of the ~~nervous system~~ host.

67. (Currently amended) A method of producing a stable graft of neural cells and contributing in the histogenesis of a living host said method comprising:

transplanting human ES derived neural progenitor cells into a living host by a the method ~~according to~~ of claim 66.

68. (Currently amended) A method of modifying a nervous system of a host, said method comprising transplanting human ES derived neural progenitor cells by a the method ~~according to~~ of claim ~~claims~~ 67.

69. (Original) The method according to claim 68 wherein said modifying of the nervous system includes any one of replacing deficient neuronal or glial cell populations, restoring

deficient functions or activating regenerative and healing processes in the nervous system to regenerate cell populations.

70. (Original) The method according to claim 68 wherein the neural progenitor cells comprise genetically modified neural progenitor cells.

71. (Currently amended) The method according to claim 70 wherein the genetically modified neural progenitor cells express specific desired genes at ~~the~~ a target organ.

72. (Currently amended) A method for treating a ~~pathological condition of the nervous system~~ a neurodegenerative disorder in a patient comprising modifying ~~a the~~ a nervous system of a said patient according to ~~elaims~~ claim 68 thereby treating said neurodegenerative disorder in said patient.

73. (Canceled)

74. (Currently amended) The method of claim 65, wherein said undifferentiated or pluripotent human embryonic stem cells are capable of proliferation *in vitro* and differentiation to neural progenitor cells, neuron cells and/or glial cells, and wherein said undifferentiated or pluripotent human embryonic stem cells are immunoreactive with markers for human pluripotent stem cells ~~including~~ selected from the group consisting of SSEA-4, GCTM-2 antigen, and TRA 1-60.

75. (Currently amended) The method according to claim 65 wherein ~~the conditions for inducing somatic differentiation of stem cells are,~~ prior to said culturing in the presence of serum free media supplemented with B27 and growth factors comprising EGF and bFGF, the undifferentiated or pluripotent human stem cells are cultured under conditions selected from any one of the following:

culturing the undifferentiated or pluripotent human stem cells for prolonged periods and at high density on a fibroblast feeder cell layer to induce differentiation;

culturing the undifferentiated or pluripotent human stem cells in serum free media;

culturing the undifferentiated or pluripotent human stem cells on a differentiation inducing fibroblast feeder layer wherein said fibroblast feeder layer does not induce extra embryonic differentiation ~~and~~ or cell death;

culturing to a high density in monolayer or on semi-permeable membranes so as to create structures ~~mimieing~~ mimicking the postimplantation phase of human development; or

culturing in the presence of a chemical differentiation factor selected from the group including bone morphogenic protein-2 or antagonists thereof.

76. (Currently amended) The method of claim 74, wherein said undifferentiated or pluripotent human embryonic stem cells are prepared by obtaining an *in vitro* fertilised human embryo; growing the embryo to a blastocyst stage of development; removing inner cells mass (ICM) cells from the embryo; culturing ICM cells on a fibroblast feeder layer under conditions which do not induce extraembryonic differentiation ~~and~~ or cell death; and promoting proliferation of undifferentiated stem cells.

77. (Currently amended) The method of claim 65, wherein said neural progenitor cells are characterized by expressed markers of primitive neuroectoderm and neural stem cells, and wherein said markers are selected from the group ~~including~~ consisting of polysialyated N-CAM, N-CAM, A2B5, ~~intermediate filament proteins including~~ nestin, and vimentin, and the transcription factor Pax-6; ~~and culturing the neural progenitor cells to promote proliferation and propagation.~~